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TO: Commissioner for Patents
Attn: Examiner Peng Ke
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FROM: George H. Gates
OUR REF.: G&C 30566.118-US-01
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Title of Document Transmitted:	**REPLY BRIEF OF APPELLANT**
Applicant:	Peter F. Janson
Serial No.:	09/780,817
Filed:	February 9, 2001
Group Art Unit:	2174
Title:	OPTIMIZING GRAPHICAL DATA SYNCHRONIZATION BETWEEN A GRAPHICAL CLIENT AND A STATELESS SERVER
Our Ref. No.:	G&C 30566.118-US-01

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G&C 30566.118-US-01

Due Date: February 13, 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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CERTIFICATE OF MAILING OR TRANSMISSION UNDER 37 CFR 1.8

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MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

We are transmitting herewith the attached:

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☒ Reply Brief of Appellant(s).

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers, if appropriate.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	
Inventor: Peter F. Janson	Examiner: Peng Ke
Serial #: 09/780,817	Group Art Unit: 2174
Filed: February 9, 2001	Appeal No.: _____
Title: OPTIMIZING GRAPHICAL DATA SYNCHRONIZATION BETWEEN A GRAPHICAL CLIENT AND A STATELESS SERVER	

REPLY BRIEF OF APPELLANT

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I. INTRODUCTION

In accordance with 37 CFR §41.41, Appellant's attorney hereby submits the Reply Brief of Appellant in response to the Examiner's Answer dated December 12, 2005 received in the above-identified application.

No fee is required for filing this Reply Brief. However, the Office is authorized to charge any necessary fees or credit any overpayments to Deposit Account No. 50-0494 of Gates & Cooper LLP.

II. ARGUMENTS

In the Answer, the Examiner reiterates the prior rejections, and then includes a response to the arguments found in the Brief of Appellant using somewhat different citations to the references. In this regard, this Reply Brief of Appellant incorporates by reference herein the entirety of the previously filed Brief of the Appellant. Moreover, additional arguments are also presented below.

The Examiner's Answer again asserts that claims 1-7, 10-16, and 19-25 are anticipated under 35 U.S.C. §102(e) by U.S. Patent No. 6,331,858 (Fisher); that claims 8, 17, and 26 are rendered obvious under 35 U.S.C. §103(a) in view of the combination of U.S. Patent No. 6,331,858 (Fisher) and U.S. Patent No. 6,374,402 (Schmeidler); and that claims 9, 18, and 27 are rendered obvious under 35 U.S.C. §103(a) in view of the combination of U.S. Patent No. 6,331,858 (Fisher) and U.S. Patent No. 6,414,693 (Berger).

Moreover, the Examiner's Answer sets forth the following new arguments:

> (10) Response to Argument
>
> Applicant's arguments focused on the following:
>
> A) Fisher fails to teach "downloading one or more root object nodes of a scene from the server to the graphical client."
>
> B) Fisher fails to teach "intersecting bounding volumes for the object nodes with a view frustum in the graphical client to determine a set of visible and undefined object nodes, wherein the view frustum is the part of the model between cutting planes defined by the scene."
>
> C) Fisher fails to teach "downloading the object nodes in the set of visible and undefined object nodes from the server to the graphical client, wherein the graphical client renders the scene from the object nodes."
>
> Examiner answers:
>
> A) Fisher teaches "downloading one or more root object nodes of a scene from the server to the graphical client."
>
> During patent examination, the claims are given the broadest reasonable interpretation consistent with the specification. See In re Morris, 127 F.3d 1048, 44 USPQ2d 1023 (Fed. Cir. 1997). Here, the specification of the application defines a roots object node as an anchoring node that has one or more object nodes connected to it by zero or more edges. (specification; page 5, lines 25-30) Similarly, each furniture node of Fisher is a roots object node, because it acts as an anchoring node that allows user to attach additional object nodes, such as fabric type, to it, (column 4, lines 16-46) The fabric type is a separate data object from the furniture node in that users can change the fabric type without changing the furniture. (column 4, lines 35-46)
>
> Furthermore, the furniture object nodes are downloaded from a server because the system disclosed by Fisher is an internet system that requires users to download scenes from a server. (column 3, lines 40-57)
>
> B) Fisher teaches "intersecting bounding volumes for the object nodes with a view frustum in the graphical client to determine a set of visible and undefined object nodes, wherein the view frustum is the part of the model between cutting planes defined by the scene."
>
> Based on the specification of the application, this limitation recites a stage that happens right before a 3D scene is fully displayed on a client's computer, where there is a set of objects that still needs to be downloaded. (specification; page 6, lines 27-35, page 8, lines 23-25; figure 4, figure 4. item 404, 414) A visible and undefined object, as inferred from the specification, is an object that is selected by a user but is

still undefined on the screen, and it only exists before the scene is fully rendered. (specification; page 6, lines 27-35) The intersecting bounding volumes of the object nodes with a view frustum can be interpreted as a user's view of a virtual 3D world (specification page 8, lines 23-25; figure 4) This interpretation is supported by the specification because the VU object nodes are redefined when user's perspective / camera has moved. (specification; figure 4. item 404, 414)

Fisher's system also encounters the pre-download stage, whenever a user decides to change his/her view point of Fisher's 3D world, (Fisher column 5, lines 25-41) or add an item to the 3D world, (Fisher; column 5, lines 40-60) Just like the applicant, Fisher determines which VU object needs to be added to the new scene. (Fisher column 5, lines 45-52) Therefore, Fisher teaches this limitation.

C) Finally, Fisher teaches downloading the object nodes in the set of visible and undefined object nodes from the server to the graphical client, wherein the graphical client renders the scene from the object nodes.

Based on the specification of the application, a visible and undefined object is an object that is selected by a user but is still undefined on the screen, and it only exists before the scene is fully rendered. (specification, page 6, lines 27-35) Here, after Fisher determines which VU object needs to be added to a new user defined scene, (Fisher column 5, lines 45-52) the object is downloaded from the server. (Fisher, column 5, lines 45-51)

Appellant's attorney respectfully disagrees.

The Appellant's invention, as recited in independent claims 1, 10 and 19, is patentable over the references, because it contains limitations not taught by the references.

A. The Limitation of "Downloading One or More Root Object Nodes of a Scene From the Server to the Graphical Client"

The Examiner's Answer cites Fisher as disclosing the limitation of "downloading one or more root object nodes of a scene from the server to the graphical client" at col. 4, lines 16-46 and col. 3, lines 4-57, which are set forth below:

Fisher: Col. 4 lines 16-46

A second web page, Home.htm is displayed in a frame on the left hand side of the screen. This contains a display of 2D samples or swatches of fabrics or materials which are available for the products displayed in the right hand frame. A form linked to a search engine may be included, to allow the customer to select a fabric sample by name. Alternatively, the user can scroll through all the available samples. Marker icons are displayed beside each sample. The marker icons identify objects in the 3D scene. The top left hand sample in this frame is shown as an enlarged detail in FIG. 3B. The relevant material is suitable for both curtains and for covering the upholstered chair. Accordingly, both a curtain marker 31 and a chair marker 32 are displayed with the sample. The user can select the fabric to be applied, for example to the chair, by clicking on the chair marker beside the fabric sample.

> The HTML document includes Javascript which detects the selection made by the user and sets the relevant marker parameter to a value which depends on which fabric was selected. This marker value is returned to the Viscape application where it is used to address an index of URL's (uniform resource locators) corresponding to texture data for different fabrics. A connection to the selected URL is then opened and the relevant texture file is downloaded and mapped onto the relevant object using the LSprite function, as described previously. The display of the 3D scene is immediately updated, so that the chair is shown finished in the newly selected fabric. This updating occurs automatically, without it being necessary to refresh the entire 3D frame.
>
> Fisher: Col. 3 lines 40-57
>
> In the present example, the 3D interior is generated using a virtual world authoring system known as VRT which is available commercially from Superscape Ltd. The data generated by VRT is then viewed by the web browser using a plug-in application. The plug-in application makes use of a VRML (virtual reality markup language) viewer known as Viscape (Trademark), also commercially available from Superscape Ltd. The plug-in application also establishes a socket connection with the web port of the web server. It will be understood however that these particular generation and viewing tools are described by way of example only, and that other generators/viewers may be used without departing from the scope of the present invention. For example, there are widely available 3D world generation tools for the C programming language known as AVRIL, and resulting worlds may be viewed with any VRML-1 compliant viewer. As a further alternative, the JavaScript language supports 3D modelling.

The above portions of Fisher do not teach or suggest "downloading one or more root object nodes of a scene from the server to the graphical client, wherein the scene is a collection of parameter values for rendering a model," especially with regard to "root object nodes," as that term is defined in Appellant's specification, and in the context of the graph structure described by Appellant's specification.

Appellant's specification states that the 3D database 208 used by the graphics client 108 comprises a collection of one or more models, wherein each model is a collection of one or more graphical nodes in a hierarchy that forms a directed acyclic graph (DAG). Each graph 300 includes a root object node 302 and one or more object nodes 304 connected by zero or more edges 306. A node 302 or 304 is a container of geometry (such as lines, curves, polygons, etc.), appearance attributes (such as color, materials, etc.), transformations (such as rotate, scale, translate, etc.), as well as references to other nodes 302 or 304. Every node 302 and 304 has a unique persistent identifier that is used to reference the node 302 and 304. Each reference must also include the bounding volume for the node 302 and 304 it references, or indicate that it is unbounded (i.e., is always visible in visibility computations).

The Examiner's Answer asserts that each furniture node of Fisher is a root object node, because it acts as an anchoring node that allows the user to attach additional object nodes, such as fabric type, to the furniture object. According to the Examiner's Answer, the fabric type is a separate data object from the furniture node in that users can change the fabric type without changing the furniture.

Appellant's attorney disagrees.

The relationship between furniture objects and fabric samples does not teach or suggest "root object nodes." Instead, fabric samples in Fisher are merely appearance attributes (i.e. texture files) mapped or applied to a furniture object. For example, when the user selects a marker icon representing the object furniture next to a fabric sample, the texture file for the fabric sample is downloaded and mapped to the object.

Nowhere in Fisher is there any discussion of a fabric object that is linked to a furniture object, in the sense that would describe furniture objects as "root object nodes," as defined in Appellant's specification.

B. The Limitation of "Intersecting Bounding Volumes for the Object Nodes With a View Frustum in the Graphical Client to Determine a Set of Visible and Undefined Object Nodes"

The Examiner's Answer also cites Fisher as disclosing the limitation of "intersecting bounding volumes for the object nodes with a view frustum in the graphical client to determine a set of visible and undefined object nodes" at col. 5, lines 25-60, which is set forth below:

> Fisher: Col. 5, lines 25-60
>
> FIG. 4 is a diagram showing an enlarged detail of the left hand frame.
>
> FIG. 5 shows how the screen display is changed after the user has clicked on the curtain marker icon beside the sample s3, and has clicked on the chair marker icon beside sample s6, and the corresponding different surface finishes have been mapped onto the curtains and chair in frame F2.
>
> Although described above in relation to an on-line furniture catalogue, it will be understood that the invention is applicable in a wide range of contexts. As a further example, manufacturers of high fidelity loudspeakers commonly offer their products in a wide range of wood veneers or other materials. The display in this case might include a 3D scene showing different speakers in a domestic setting, and a 2D display of samples of different veneers and materials which, when selected by the user, are mapped onto the speakers shown in the 3D scene.
>
> As well as, or as an alternative to, using the left hand frame for the selection of surface finishes, it may be used to control the selection of objects for insertion in

> the 3D scene. For example, the user may first generate an empty 3D interior based on measurements of a room. Subsequently the user may access the on-line catalogue of a furniture retailer and may select objects, such as a chair, which are then downloaded and inserted in the 3D scene using the same mechanism as that adopted for downloading textures in the preceding examples.
>
> The techniques described above may form part of an on-line trading operation, in which, after the selection of certain objects and finishes, the user places an order, for example via a form displayed in the left hand frame. Optionally, payment may be made on-line, for example using an encrypted credit card number, and the order may be processed automatically at the retailer, for example by transferring data identifying the object and finish, and the purchaser's address, to a warehouse, or to a manufacturing/assembly operation in the case where the desired item is not already in stock.

Nowhere is there any discussion in the above portions of Fisher of "a set of visible and undefined object nodes," "bounding volumes for the object nodes" or "intersecting bounding volumes for the object nodes with a view frustum in the graphical client to determine a set of visible and undefined object nodes."

Nonetheless, the Examiner's Answer asserts that a visible and undefined object, as inferred from the specification, is an object that is selected by a user but is still undefined on the screen, and it only exists before the scene is fully rendered. The Examiner's Answer also asserts that intersecting bounding volumes of the object nodes with a view frustum can be interpreted as a user's view of a virtual 3D world, and that this interpretation is supported by the specification because the VU object nodes are redefined when the user's perspective or camera has moved. According to the Examiner's Answer, Fisher's system also encounters the pre-download stage, whenever a user decides to change his viewpoint into the 3D world, or add an item to the 3D world. According to the Examiner's Answer, Fisher is like the Appellant's invention, in that Fisher determines which visible and undefined object needs to be added to the new scene.

Appellant's attorney disagrees.

Appellant's attorney submits that this argument is based on hindsight by the Examiner, as there is no suggestion in Fisher of performing this limitation. Apparently, because the above portions of Fisher are silent as to how objects are rendered when the user's perspective is moved or when an object is added to the displayed 3D scene, the Examiner feels it is inherent that Fisher performs the same function as Appellant's claims.

However, there are a number of different ways that Fisher could be performing these functions. For example, it could be that Fisher downloads and fully renders all objects in the 3D scene, regardless of whether they are visible from the user's perspective, and simply displays the

rendered objects when they fall within the user's perspective. In another example, it could be that Fisher fully renders all objects on the server, before they are added to the 3D scene, and simply downloads the fully-rendered objects when they are selected by the user for inclusion in the 3D scene.

The only certainty is that it cannot be known, from the portions of Fisher set forth above, how Fisher performs these functions.

In Appellant's invention, on the other hand, the visible and undefined objects are objects of the scene that have not yet been rendered for display on the screen at the client. Appellant's invention determines which object nodes are visible and undefined object nodes, because the visible and undefined object nodes must be downloaded from the server in order to render the scene for display at the client. This determination is performed by intersecting the bounding volumes for the object nodes with a view frustum in the client. Based on this determination, the visible and undefined objects are downloaded from the server so that the scene can be rendered.

Nowhere does Fisher describe any of these limitations.

Instead, the objects displayed in the 3D scene in Fisher have already been downloaded, because they have already been rendered for display, or are downloaded in response to user selection. Indeed, the only description of downloading objects in Fisher results from user selection of objects for insertion in the 3D scene. However, such downloading is not based on determining the set of visible and undefined object nodes by intersecting the bounding volumes for the object nodes with a view frustum in the graphical client.

C. The Limitation of "Downloading the Object Nodes in the Set of Visible and Undefined Object Nodes From the Server to the Graphical Client, Wherein the Graphical Client Renders the Scene From the Object Nodes"

Finally, the Examiner's Answer cites Fisher as disclosing the limitation of "downloading the object nodes in the set of visible and undefined object nodes from the server to the graphical client, wherein the graphical client renders the scene from the object nodes" at col. 5, lines 45-52, which is set forth above. The Examiner's Answer asserts this occurs whenever a user decides to change the view point of the 3D scene or add an item to the 3D scene.

Again, Appellant's attorney submits that this argument is based on hindsight by the Examiner, as there is no suggestion in Fisher of performing this limitation. As noted previously, the above portions of Fisher do not teach or suggest determining a set of visible and undefined object

nodes by intersecting bounding volumes of the object nodes with a view frustum, and thus the above portions of Fisher do not teach or suggest downloading the set of visible and undefined object nodes.

In Appellant's invention, the visible and undefined objects are objects of the scene that have not yet been rendered for display on the screen at the client. Appellant's invention determines which object nodes are visible and undefined object nodes, because the visible and undefined must be downloaded from the server in order to render the scene at the client. This determination is performed by intersecting the bounding volumes for the object nodes with a view frustum in the graphical client. Based on this determination, the visible and undefined objects are downloaded from the server so that the scene can be rendered.

Nowhere does Fisher describe similar functions.

Instead, as noted above, the objects displayed in the 3D scene in Fisher have already been downloaded, because they have already been rendered for display, or are downloaded in response to user selection, and the only description of downloading objects in Fisher results from user selection of objects for insertion in the 3D scene.

However, the downloading described in the above portions of Fisher is not based on determining the set of visible and undefined object nodes by intersecting the bounding volumes for the object nodes with a view frustum in the client.

D. Summary

Thus, Appellant's attorney submits that independent claims 1, 10 and 19 are allowable over Fisher.

In addition, Schmeidler and Berger fail to overcome the deficiencies of Fisher as they relate to independent claims 1, 10 and 19. Recall that Schmeidler was cited only against dependent claims 8, 17 and 26 as teaching a stateless server, and Berger was cited only against dependent claims 9, 18 and 27 as teaching a client-side cache.

Thus, the references, taken individually or in combination, do not anticipate or render obvious Appellant's claimed invention. Moreover, the various elements of Appellant's claimed invention together provide operational advantages over the references. In addition, Appellant's invention solves problems not recognized by the references.

Appellant's attorney also submits that dependent claims 2-9, 11-18, and 20-27 are allowable over Fisher, Schmeidler, and Berger in the same manner, because they are dependent on

independent claims 1, 10 and 19, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-9, 11-18, and 20-27 recite additional novel elements not shown by Fisher, Schmeidler, and Berger, as set forth in the Brief of Appellant.

III. CONCLUSION

In light of the above arguments, Appellant's attorney respectfully submits that the cited references do not anticipate nor render obvious the claimed invention. More specifically, Appellant's claims recite novel physical features which patentably distinguish over any and all references under 35 U.S.C. §§ 102 and 103.

As a result, a decision by the Board of Patent Appeals and Interferences reversing the Examiner and directing allowance of the pending claims in the subject application is respectfully solicited.

Respectfully submitted,

GATES & COOPER LLP
Attorneys for Appellant

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